Proposed Plan and Draft Modification of the Rocky Flats Environmental Technology Site Resource Conservation and Recovery Act Permit for Operable Unit 3 — Offsite Areas

United States Department of Energy (DOE) | Jefferson County, Colorado | November, 1995

DOE Announces Preferred Alternative for OU 3, Offsite Areas

This ***Proposed Plan***[1] presents DOE's preferred alternative for remedial action at the Rocky Flats Environmental Technology Site (RFETS) *Operable Unit* 3 (OU 3) – Offsite Areas. RFETS is located in Jefferson County, Golden, Colorado (see Figure 1). The OU 3 – Offsite Areas occupies approximately 38 square-miles of land located outside the RFETS boundary as shown on Figure 2.

The Proposed Plan serves as the basis for the OU 3 ***Corrective Action Decision/Record of Decision (CAD/ROD)*** and applies only to OU 3. All interested parties are encouraged to review and comment on the Proposed Plan and to submit their comments to the locations identified below. This Proposed Plan has been prepared by DOE in cooperation with the U.S. Environmental Protection Agency (EPA) and the Colorado Department of Public Health and Environment (CDPHE), pursuant to the ***Resource Conservation and Recovery Act (RCRA)***, the ***Colorado Hazardous Waste Act (CHWA)***, and the ***Comprehensive Environmental Response Compensation and Liability Act (CERCLA)***.

This Proposed Plan meets the requirements of CERCLA section 117(a), RCRA, and the ***Rocky Flats Interagency Agreement (IAG)***, between DOE, EPA, and CDPHE dated January, 1991. The Draft Modification of the Rocky Flats RCRA Permit is used to incorporate remedial action decisions at the Site into the Site's RCRA Permit. CDPHE issues the Final Hazardous Waste Permit Modification when the remedial decision process is completed.

The preferred remedial alternative proposed in this plan for OU 3 is No Action (no remedial action taken). In accordance with the IAG and EPA guidance, a No Action decision is appropriate at sites where a previous removal action or natural environmental processes mitigate the likelihood of an adverse effect on the health of a human or ecological population as a result of exposure to chemical and/or radiological constituents. Results of the ***RCRA Facility Investigation/Remedial Investigation (RFI/RI)*** performed at OU 3 show that there is a low risk of exposure to chemical and/or radiological constituents in excess of background conditions and that OU 3 poses no unacceptable current or future risk to human health or the environment.

Opportunities for Public Involvement
Mark Your Calendar

Public Comment Period:

Public Comment Period:
Time:
Location:

[1]Bold, italic words or acronyms are defined in the glossary located at the end of this Proposed Plan.

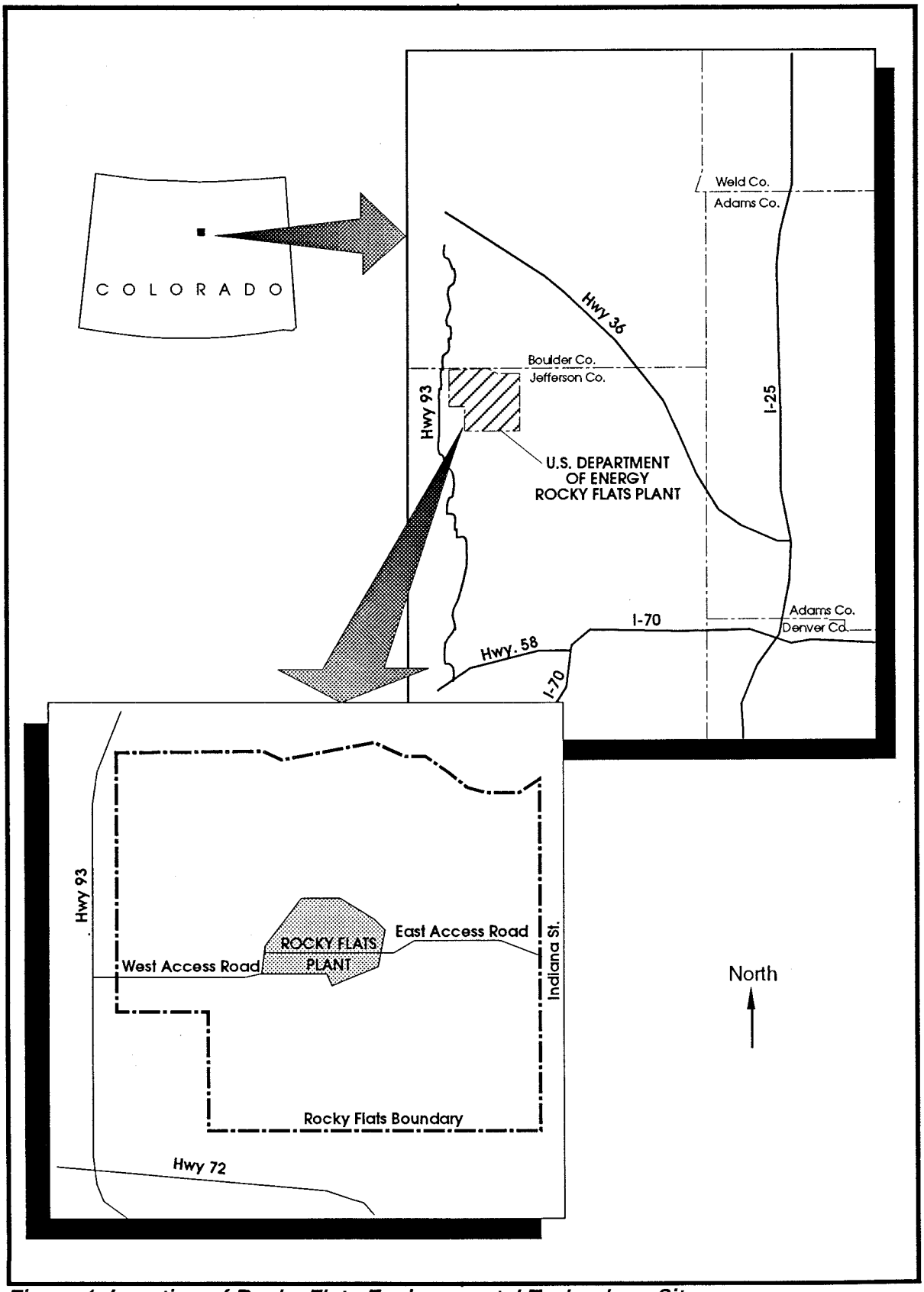

Figure 1 Location of Rocky Flats Environmental Technology Site

Send Comments to:
DOE External Affairs Office
P.O. Box 928
Golden, Colorado 80402-0928

Name of Contact:
Colorado Department of Public Health & Environment
of HMWMD-HWC-B2
Denver, Colorado 80222-1530
Phone: (303) 692-3358

Information Repositories

Rocky Flats Public Reading Room
Front Range Community College
Level B
3645 W. 112th Avenue
Westminster, Colorado 80030

Colorado Department of Public Health & Environment
Hazardous Materials & Waste Mgmt Division
4300 Cherry Creek Drive South
Denver, Colorado 80222-1530

U. S. Environmental Protection Agency
Superfund Records Center
999 18th Street, 5th Floor
Denver, Colorado 80202-2401

Rocky Flats Citizens Advisory Board
9035 Wadsworth Parkway
Suite 2250
Westminster, Colorado 80021

Standley Lake Library
8485 Kipling
Arvada, Colorado 80005

Public Involvement Process

Community acceptance is one of the criteria that DOE and the regulatory agencies must evaluate during the RCRA/CERCLA process of selecting a final site remedy. Evaluation of community acceptance is accomplished through a formal public involvement program. The DOE program consists of (1) continuing dialogue with citizens on issues of concern, such as results of the RFI/RI, and (2) seeking citizen participation in the selection of a final remedy method at the subject site. This Proposed Plan is being issued for public review and comment in response to the second program component.

A public comment period will be held for the OU 3 Proposed Plan from _____ to _____. A public hearing will be held on _____. In addition to the Proposed Plan, the public is encouraged to review and comment on the Final OU 3 RFI/RI Report, which presents results of the investigation conducted at OU 3 (RFI/RI copies are available at each of the Information Repositories). Comments on the Proposed Plan and the RFI/RI Report may be submitted orally or in writing at the public hearing, or mailed directly to either of the two comment mailing addresses listed in the Opportunities for Public Involvement section beginning on Page 1. Written comments must be postmarked no later than _____.

Upon timely request, the public comment period may be extended. Such a request must be submitted in writing to DOE and postmarked no later than _____. **FAILURE TO RAISE AN ISSUE OR PROVIDE INFORMATION DURING THE PUBLIC COMMENT PERIOD MAY PREVENT THE PUBLIC FROM RAISING THAT ISSUE OR SUBMITTING SUCH INFORMATION IN AN APPEAL OF THE REGULATORY AGENCIES' FINAL DECISION.**

DOE, EPA, and CDPHE will make the final remedy action selection after review and consideration of comments received from the Public. A summary of responses to all Public and regulatory agency comments will be presented in the ***Responsiveness Summary*** section of the OU 3 *CAD/ROD* document.

Site Background

RFETS is located in northern Jefferson County, Colorado (see Figure 1). RFETS occupies approximately 6,550 acres of Federal land and is a government-owned and contractor-operated facility that is part of the nationwide nuclear weapons production complex. DOE's former mission at RFETS was to produce components for nuclear weapons. Its current mission is to manage wastes and materials and to cleanup and convert the Site in a manner that is safe, environmentally and socially responsible, physically secure, and cost-effective.

Most plant structures are located within the Rocky Flats Industrial Area, which occupies approximately 400 acres. This area is surrounded by a buffer zone of approximately 6,150 acres. Until 1992, RFETS was used to fabricate nuclear weapon components from plutonium, uranium, beryllium, and stainless steel. Support activities included chemical recovery, purification of recyclable transuranic radionuclides, and research and development in metallurgy, machining, nondestructive testing, coatings, remote engineering, chemistry, and physics.

The production processes at Rocky Flats resulted in the generation of radioactive and non-radioactive wastes. Onsite storage and disposal of these wastes has contributed to hazardous and radioactive contamination in onsite soils, surface water, and groundwater. Due to the complex nature of RFETS, ***Individual Hazardous Substance Sites (IHSSs)*** within the Site were defined and grouped into sixteen OUs based upon one or more common features. This included the type of contaminant, the environmental media, or the previous use of the contaminated areas.

OU 3 is defined as an offsite area. While this definition is inclusive of areas north, east, south, and west of the RFETS boundary, a working definition of OU 3 was developed to include suspected contaminated areas and to focus the RFI/RI on areas where the evaluation of previous data has indicated the presence of measurable contamination. Therefore, OU 3 consists of four areas identified as IHSSs (see Figure 2).

IHSS 199 — Contamination of Soils: IHSS 199 is composed of surface soils located outside the RFETS boundary that are contaminated by historical releases from the Site, including 350 acres of land located east of Indiana Street known as the Remedy Lands. This remedy acreage was prescribed as a result of a 1975 lawsuite filed against the U.S. DOE by the Church (McKay) plaintiffs and Great Western Venture Partnership. Additional information on the Remedy Lands can be referenced in the Final Past Remedy Report, Operable Unit No. 3 – IHSS 199.

IHSS 200 — Great Western Reservoir: IHSS 200 consists of Great Western Reservoir, the associated drainages flowing into and out of the reservoir, and their respective sediments. Great Western Reservoir is located approximately 1-1/2 miles east of the Site.

IHSS 201 — Standley Lake: IHSS 201 includes Standley Lake, the associated drainages flowing into and out of the reservoir, and their associated sediments. Standley Lake is located approximately 2 miles southeast of the Site.

IHSS 202 — Mower Reservoir: IHSS 202 consists of Mower Reservoir, the associated drainages flowing into and out of the reservoir, and their respective sediments. Mower Reservoir is located approximately 1-1/2 miles southeast of the Site and approximately 1,500

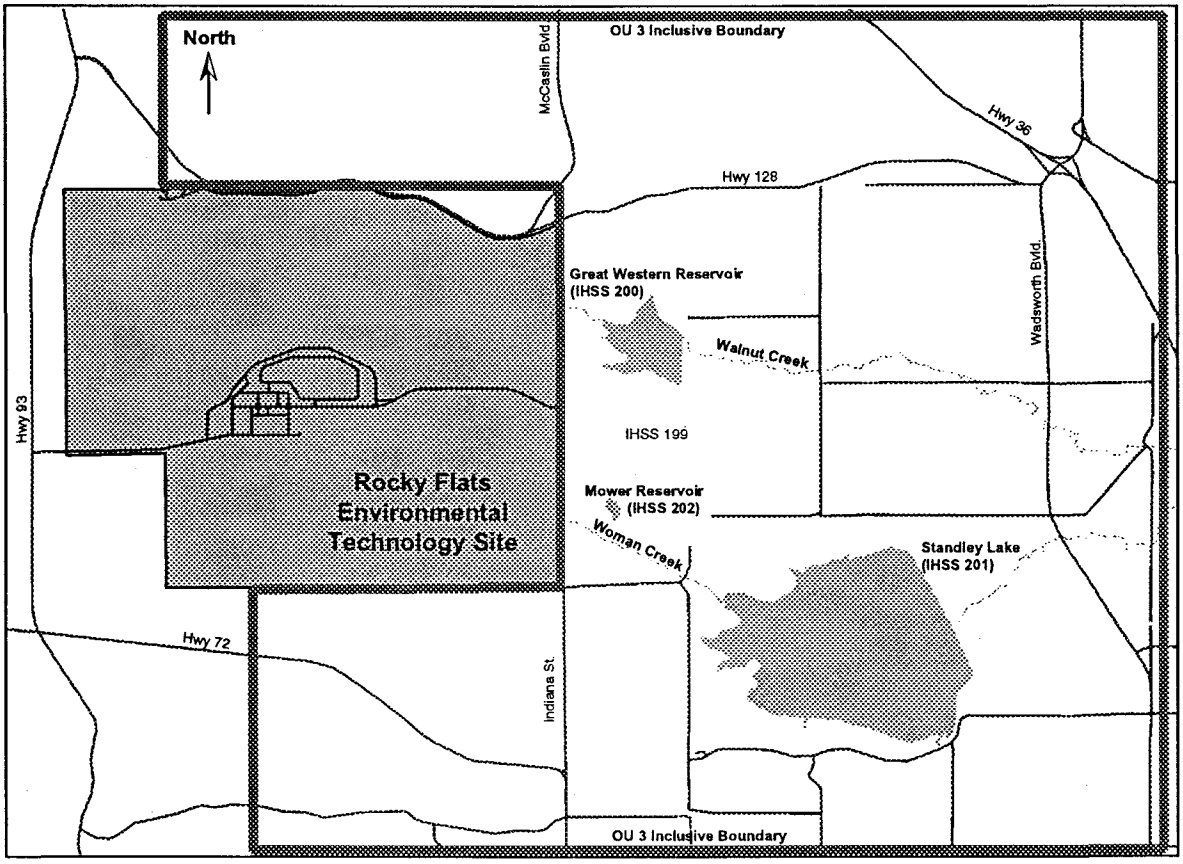

Figure 2 Operable Unit 3 Location Map

feet east of the eastern RFETS buffer zone boundary.

Summary of Site Risks

The risks to human health and the environment associated with OU 3 are characterized within the OU 3 RFI/RI. The RFI/RI was completed in accordance with the requirements presented in the IAG and specifically identified in the OU 3 RFI/RI Work Plan and addenda. The objectives of the RFI/RI are as follows:

- Define physical features and ecological characteristics of OU 3.
- Define sources of contamination.
- Characterize the nature and extent of contamination in each media of each IHSS (i.e., soil, sediment, surface water, groundwater, and air).
- Describe contaminant fate and transport mechanisms.
- Collect data to support the quantitative Baseline Risk Assessment which includes the Human Health Risk Assessment and the Ecological Risk Assessment.

These objectives have been met by reviewing historical information; completing sampling and laboratory analyses of surface soils, subsurface soils, sediments, groundwater, surface water, and air to support the Human Health Risk Assessment; and completing sampling and laboratory analyses of terrestrial and aquatic biota to support the Ecological Risk Assessment. The

results of an evaluation of human health and ecological ***risks*** at OU 3 are presented in the RFI/RI report. Risks were evaluated and quantified for each media of each IHSS by applying the specific risk characterization guidance agreed upon by EPA, CDPHE, and DOE. The results of the risk assessment process are compared with regulatory agency guidelines that are developed for the purpose of protecting human health.

The Baseline Risk Assessment evaluated health risks from surface water and sediments in Great Western Reservoir (IHSS 200), Standley Lake (IHSS 201), and Mower Reservoir (IHSS 202) as well as from the soils surrounding these bodies of water (IHSS 199). For the reservoir sediments, the only ***chemical of concern (COC)*** identified during the RFI/RI investigation was plutonium-239/240 in the surface sediments of Great Western Reservoir. There were no other sediment COCs identified and no COCs identified in the surface water. For surficial soils, the COCs identified were plutonium-239/240 and americium-241.

A residential exposure scenario and a recreational exposure scenario were used to assess the potential exposure risks in OU 3. The exposure assessment develops scenarios under which exposure to COCs may take place, and takes into consideration the exposure routes, potential receptors, durations of exposure, transport media, and exposure source areas. The residential exposure scenario is the most conservative exposure scenario and the recreational exposure scenario is the least conservative scenario.

For residential exposure to the surficial soils (IHSS 199), direct contact to plutonium and americium is assumed to occur as a result of ingestion and inhalation. Indirect contact is assumed to occur through limited vegetable, beef, and milk consumption, and through external radiation exposure. Exposure to sensitive populations were considered in the residential scenario (i.e., children). Using these exposure parameters, and the highest level of plutonium identified in the soils (6.47 picocuries per gram [pCi/g]), the health risk calculated for the soils is 3 in 1,000,000. Specifically, the risk posed by this level of plutonium in the soil may result in, at most, three additional incidences of cancer in a lifetime per one million people.

For recreational exposure to surficial soils, the risk values are even lower because the exposure area is larger, the exposure duration is shorter, and the exposure is limited to soil ingestion, inhalation, and external radiation. The estimated excess lifetime cancer risk is 0.05 in 1,000,000 for exposure to soils in a recreational scenario.

While not currently plausible, residential exposure to sediments in Great Western Reservoir (IHSS 200) was evaluated by assuming that a resident will occupy a drained Great Western Reservoir, and be exposed to the surface sediments. A residential scenario was evaluated due to the uncertainty regarding the future use of Great Western Reservoir. In this scenario, the exposure parameters for the sediments of this reservoir are the same as for the surficial soils of IHSS 199, and include sediment ingestion, inhalation, external radiation exposure, and ingestion of vegetables, beef, and milk. The estimated excess cancer risk associated with these exposures is 0.9 n 1,000,000. By using conservative assumptions and evaluating residential exposure, the maximum risk is calculated for Great Western Reservoir in the event that the reservoir is drained and developed.

For recreational conditions in which exposure is intermittent and of short duration, risk from exposure to the sediments in Great Western Reservoir is 0.01 in 1,000,000.

A comparison of the Human Health Risk Assessment results with regulatory agency guidelines indicates that all of the risk values for residential and recreational exposure scenarios represented above are within or below the EPA guidelines for a risk range that is considered to be protective of human health (100 in 1,000,000 to 1 in 1,000,000). These values illustrate that under the most conservative residential exposure assumptions the risk in OU 3 from Site contaminants is very low, and is below the levels that warrant additional investigation or clean-up.

The Ecological Risk Assessment did not identify any significant ecological effects on terrestrial or aquatic ecosystems.

Summary of Remedial Alternative

Based on results of the Human Health Risk Assessment, the remedial alternative proposed in this Proposed Plan for OU 3 is No Action. These results show that OU 3 risks do not exceed human health-based standards set by the EPA and the CDPHE. The results of the Ecological Risk Assessment show no ecological risks or effects to terrestrial and aquatic ecosystems within OU 3. Further investigation or remedial action in OU 3 is not warranted to be protective of human health and the environment.

Glossary

Applicable or Relevant and Appropriate Requirements (ARARs): ARARs are criteria, standards, or limitations promulgated under State or Federal law which may be selected to establish cleanup levels a remedial action is to obtain.

Chemicals of Concern (COCs): Chemicals identified in a particular medium that, based on concentration and toxicity, contribute significantly to risks calculated for exposure scenarios involving that medium.

Comprehensive Environmental Response, Compensation and Liability Act (CERCLA or Superfund): A law passed in 1980 that established a program to identify abandoned hazardous waste sites, ensured that they were cleaned up, and evaluated damages to natural resources.

Corrective Action Document/Record of Decision (CAD/ROD): A public document that describes the cleanup alternative(s) selected for a RCRA/CERCLA site. The CAD/ROD is prepared based on information acquired through the RFI/RI, the Corrective Measures Study/Feasibility Study (CMS/FS) (if performed), and community participation.

Individual Hazardous Substance Site (IHSS): An area that may be contaminated as a result of previous operations and disposal practices.

Operable Unit (OU): A term defined by CERCLA used to describe a certain portion of a CERCLA site. An OU may be established based on a particular type of contamination, contaminated media (e.g., soils and water), source of contamination, and/or geographical location.

Preferred Alternative: The preliminary recommendation that is judged to provide the best balance of tradeoffs with respect to long- and short-term effectiveness, implementability, cost and the reduction of contaminant toxicity, mobility, or volume through treatment.

Proposed Plan: The public document that first introduces the preferred alternative for site remediation. The Proposed Plan is produced through the cooperation of the regulatory agencies and is reviewed by the public.

RCRA Facility Investigation/Remedial Investigation (RFI/RI): An investigation to collect and analyze information to determine the nature and extent of contamination that may be present at a site. The objectives of the OU 3 RFI/RI included characterizing the physical features and ecological characteristics of the site, defining sources of contamination, describing contaminant fate and transport, and collecting data to support a quantitative baseline risk assessment.

Record of Decision (ROD): A public record that documents and explains the cleanup decisions for a CERCLA site. The ROD is based on information from the Remedial Investigation and Feasibility Study, public comments, and community concerns.

Resource Conservation and Recovery Act (RCRA): A law passed in 1976 by the U.S. Congress to require the "cradle-to-grave" management of hazardous wastes. CDPHE, through the Hazardous Materials and Waste Management Division, implements RCRA in Colorado.

Responsiveness Summary: The section of the CAD/ROD that summarizes public and regulatory agency comments and provides responses to those comments.

Risk: The likelihood of an adverse effect on the health of a human or ecological population as a result of exposure to chemical and/or radiological constituents.